

LYME DISEASE IN THE NATIONAL PARKS

Lyme disease is an illness caused by corkscrew-shaped bacteria called spirochetes that are transmitted by ticks.

Symptoms of Lyme disease are variable. There may be no symptoms at all or they include one or more of the following a few days to weeks after the bite occurs.

- Fatigue
- Chills and fever
- Headache
- Muscle and joint pain
- Swollen lymph nodes
- A characteristic "bull's eye" skin rash called erythema migrans

Erythema migrans (Figure 1) occurs at the location of the bite. Common sites are the thigh, groin, trunk, and armpits. As the rash expands in size, the center may clear, resulting in the characteristic "bull's-eye" appearance.

Some symptoms of Lyme disease may not appear until months, or years after a tick bite or they may not appear at all.

- Arthritis is most likely to appear as brief bouts of pain and swelling, usually in one or more large joints, especially the knees.
- Nervous system abnormalities can include numbness, pain, Bell's palsy (paralysis of the facial muscles, usually on one side), and meningitis (fever, stiff neck, and severe headache).

- Heart involvement including inflammation and enlargement.

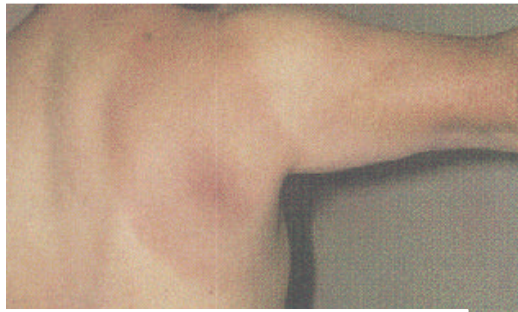


Figure 1. Erythema migrans

Lyme disease is spread by the bite of the deer tick in the northeastern and north-central states, and probably the southeast. On the Pacific Coast, the disease is transmitted to humans by the closely related, western black-legged tick. These ticks are very small in size. Figure 2 shows their relative size compared to the dime located in the upper left hand corner of the picture. This picture shows all 4 stages in the Lyme tick life cycle.

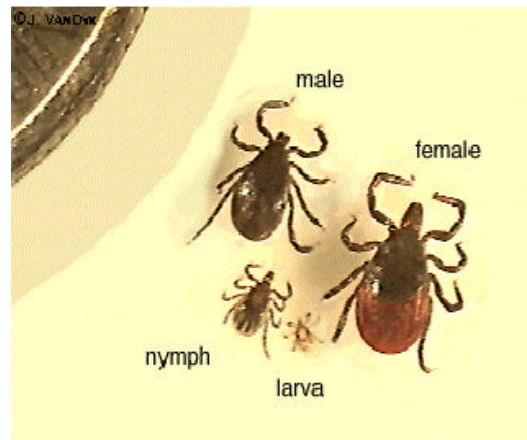


Figure 2. Deer tick life cycle
(photo by John VanDyk, Iowa State)

In the larval and nymph stages, these ticks usually feed on small mammals. Adults usually feed on deer. If these hosts are not available, these ticks will feed on other animals including man.

There are three geographic areas where risk of getting the disease is much greater than elsewhere:

- Northeast, from Massachusetts to Maryland.
- North-central states, especially Wisconsin and Minnesota.
- West Coast, particularly northern California, Oregon and Washington.

When in tick habitat (grassy, brushy, or woodland areas), several precautions can minimize your chances of being bitten by a tick.

- Tuck your pant legs into your socks or boots. Tuck your shirt into your pants. These precautions will keep ticks on the outside of your clothes, where they can be spotted and picked off.
- Wear light colored clothing. Ticks can most easily be spotted against a light background.
- Frequently inspect your clothes for ticks when in tick habitat. Have a companion inspect your back.
- Apply insect repellent containing DEET on clothes and on exposed skin other than the face, or treat clothes (especially pants, socks, and shoes) with permethrin, which kills ticks on contact.

- Inspect your head and body thoroughly for ticks when you get in from the field. Have a companion check your back, or use a mirror.
- If you are bitten by a tick, remove the tick as soon as possible. The easiest method is to grasp the tick with fine tweezers as near to the skin as you can and gently pull it out. Save the tick in a small jar for later identification. Check to see whether the mouth parts broke off in the wound. If they did, seek medical attention to get them removed.

Lyme Vaccine

Although Lyme vaccine has been approved by the Food and Drug Administration, there are several concerns about its effectiveness.

- It can take a year or longer before the three shot series produces full protection from Lyme.
- Not everyone will develop immunity from the disease even after taking the three shot series.
- Protection provided by the three shot series is of relatively short duration. Booster shots may be required as often as yearly to maintain immunity.
- Vaccine has not been approved for children less than fifteen years of age. (Company is testing the vaccine on children to determine safety and effectiveness.)
- Because of these concerns, it is strongly recommended you practice all previously mentioned safety precautions even if you receive the Lyme vaccine.

- Contact your medical provider for information about appropriateness of Lyme vaccine for you.

Early treatment is very important. See a doctor and mention the possibility of Lyme disease, if you have "flu-like" symptoms and/or the bullseye rash after being bitten by a tick, or after visiting an area where Lyme disease is common. Be sure to tell the doctor that you were bitten by a tick. A blood test can help determine if you have been infected with Lyme disease. If possible, bring in the tick for identification.

REFERENCES

Health Information, National Center for Infectious Diseases, Centers for Disease Control and Prevention,
Department of Health and Human Services

If you have any questions, please contact your Regional Public Health Consultant or park sanitarian, or call WASO Public Health for more information at 202-565-1120 or see our NPS Public Health web page at www.nps.gov/public_health/.

LYME DISEASE IN THE NATIONAL PARKS



**NATIONAL PARK SERVICE
Public Health Program
1849 "C" St., NW (Room 7427)
Washington, D.C. 20240
202-565-1120
Fax 202-565-1115**

December, 1998

